Claims

1. A method of positioning a Mobile station within a Cellular telecommunications network which includes a plurality of Base stations and a plurality of positioning elements and in which Mobile stations and Base stations communicate with one another over an air interface, said method including:

at least one positioning element transmitting a predetermined positioning signal at a predetermined time;

said Mobile station determining a window of time within which to attempt to detect said positioning signal;

said Mobile station detecting said positioning signal; and

determining a time-of-arrival value dependent on the time of arrival at said Mobile station of said positioning signal.

2. A method as claimed in claim 1 wherein said air interface operates in accordance with a code division multiple access protocol.

3. A method as claimed in either one of the preceding claims wherein said positioning signal is transmitted at a predetermined time relative to the timing of

transmissions from a Base station with which the Mobile station is in communication, and said time-of-arrival value is also relative to the timing of transmissions from said Base station.

4. A method as claimed in any one of the preceding claims wherein said positioning element transmits only intermittently, such that it is in a state of not transmitting any signals for larger average periods of time than it is in a state of transmitting signals.

5. A positioning element for use in positioning a Mobile station communicating with a Base station forming part of a Cellular telecommunications network, said positioning element comprising:

positioning-element-to-Mobile-Station transmitting means for transmitting positioning signals capable of being received by said Mobile station; and

timing means for enabling the positioning element to transmit said positioning signals at predictable times with respect to the transmissions of said Base station with which the mobile unit to be positioned is communicating.

6. A positioning element as in claim 5 further comprising:

means for receiving signals from a Base station using the air interface for receiving instructions for on-demand transmission of positioning signals and for receiving reconfiguration orders from the network via the Base station.

7. A positioning element as in claim 6 further comprising means for transmitting signals capable of detection by a base station for acknowledging reconfiguration orders from the network via the base station.

8. A positioning element as in any one of claims 5,6 or 7 powered solely by one or more batteries.

9. A cellular telecommunications network comprising a plurality of base stations and a plurality of positioning elements, each positioning element being adapted to transmit signals capable of detection by one or more mobile stations and capable of receiving signals transmitted by one or more base stations.

10. A cellular telecommunications network comprising a plurality of base stations and a plurality of positioning elements, each positioning element being adapted to generate signals capable of reception by one or more

mobile stations at a predetermined time relative to the transmissions from at least one of said base stations.

11. A cellular telecommunications network as claimed in either one of claims 9 or 10 in combination with a mobile station.

12. A Mobile station for communicating with a Cellular telecommunications network preferably as claimed in either one of claims 9 or 10 via an air interface, said Mobile station including:

Base-Station-to-Mobile-Station receiving means for receiving signals from a Base station; and

positioning-element-signal detecting means for detecting a positioning signal transmitted by a positioning element.

13. A mobile station as in claim 12 wherein said positioning-element-signal detecting means includes window-of-reception determination means for determining a window-of-reception within which a positioning signal is expected to be received.

14. A mobile station as in claim 13 wherein said window-of-reception is predetermined relative to the time of reception at the mobile station of the signals from the

serving Base station.

15. A mobile station for communicating with a cellular telecommunications network comprising a plurality of base stations and a plurality of positioning elements,

said mobile station including discriminating means for discriminating between signals transmitted by said base stations and signals transmitted by said positioning elements.

16. A mobile station as claimed in any one of claims 12-15 including means for discriminating between signals from a base station and signals from a positioning element by determining the pattern of repetition of signals and comparing the determined pattern with one or more known patterns of repetition of signals from either bases stations or positioning elements.

17. The use of a mobile station adapted to be positioned within a cellular telecommunications network in accordance with the method of any one of claims 1 to 4.